

RFID Watches Over School Kids in Japan

A group of children in Yokohama City wears active tags to keep them safe on their way to and from school.

By Claire Swedberg

Dec. 16, 2005—Children in Yokohama City, Japan, are the focus of a trial intended to test whether radio frequency identification might make Japanese school children safer on their way to school and back again.

The four-month trial began this month using AeroScout's T2 battery-powered RFID tags with call buttons. Nissan Motor Co., NTT Data Corp., Its Communications Inc., Tokyo Security Co. and Trendy Corp. are also participating in the trial. The system tracks the movement of children in a 2- by 2 1/2-kilometer (1.2- by 1.6-mile) area surrounding a city school.

Each child participating in the program wears a bracelet with a 2.4 GHz RFID tag complying with the 802.11 W-Fi standard. The tags can be set to send a signal, every second or every minute, to existing Cisco Wi-Fi access points used by the city for wireless Internet access. Those Wi-Fi access points function as RFID interrogators (readers).

Known as i-Safety, the system uses AeroScout software to determine the location of the child based on the tag's signal strength received by Wi-Fi access points in the vicinity. That location information then goes to an NTT-run database, where a tag's unique Media Access Control (MAC) address is matched to that location.

The tags can transmit a signal to Wi-Fi access points as far as 1,000 feet away, and can be used to trace children within 10 meters (33 feet) of their actual location, at any point in the area where the trial is being held. In addition, the RFID tag comes with a call button a child can press to send an RF signal notifying the system he or she needs assistance.

AeroScout's T2 RFID tags are also being added to select Nissan vehicles regularly driven through the area on business, or for errands. The onboard RFID tags will send their MAC addresses to the same Wi-Fi access points as the cars drive through the trial area. NTT Data can then send a wireless alert message to a box installed under the passenger seat whenever the car drives near a child. When that happens, the box emits a recorded voice warning telling the driver a child is close by. There are two purposes for this function, Slobin says. First, participating drivers who pass through the area will know to avoid hitting the child. Second, designated safety guards monitoring the area by car can be notified by a voice message explaining that a child has pressed the call button, and identifying where that child is.

The system can also be set up to notify parents or guardians automatically via e-mail on a cellular phone or PC if a child passes a specific Wi-Fi access point on the way to or from school. If a child presses the tag's call button, the system will send parents an e-mail message to their cellular phone or PC, notifying them that their child needs assistance. The parents will also receive an image on the phone screen of a map showing where the child is.

The tags do not carry any information about the child, says AeroScout's director of marketing, Josh Slobin. Instead, the only information on the tag is its specific MAC address, a unique ID code used to identify networked devices. The NTT-run database contains data related to that address, such as the wearer's name, home address, parents and phone number.

"The information about the child resides on the software side of the system. There is no data being transmitted that is potentially insecure," Slobin says. That means no one could access the child's name or other personal information simply by using an RFID interrogator to capture the tag's data.

There has been a growing interest in child security in Japan, where most children make their way to school without a parent, and where there has been a series of recent crimes against children while in transit to school.

"Success for us would be to increase public confidence in their children's safety in Japan," Slobin explains. He says the system, thus far, has generated considerable excitement in Japan, with six television studios filming the early days of the trial. Slobin says he hopes the trial will prove that such an RFID solution could improve children's safety.

The participating companies say they plan to expand the detection range of the tags and adjust the system to respond to increased car speeds based on the test results. NTT Data is responsible for the overall coordination and system development; Its Communications Inc., for the provisioning of the network infrastructure, including wireless LAN-based transceiver stations; Trendy, for the system development and operation; and Tokyo Security, for the deployment of security guards to assist in community patrolling, and to go to locations whenever there is trouble.

AeroScout hopes to see the system in use at other school districts in Japan, and then worldwide once the trial has completed.

Copyright ©2005 RFID Journal, Inc. All Rights Reserved